IN THE CLAIMS:

3. (amended) An apparatus for measuring spectral characteristics of received light, comprising:

one or more light receivers, wherein the received light is received by the one or more lights receivers;

one or more spectral sensors coupled to receive at least a portion of the received light, wherein the one or more spectral sensors measure the intensity of the received light in one or more predetermined spectral bands; and

a processor, wherein the processor receives data corresponding to one or more light intensities measured by the one or more spectral sensors;

wherein the processor determines a data value of at least two bits based on the received light measured in each of the one or more predetermined spectral bands, wherein the data value for each spectral band is determined based on the measured light intensity level of the received light in each spectral band.

4. (previously presented) The apparatus of claim 3, wherein the at least two bits of the data value are determined based on a comparison of a measured intensity value with a plurality of threshold values.

5. (previously presented) The apparatus of claim 4, wherein intensities of received light are measured in N spectral bands, wherein M bits of data value are determined for each spectral band, wherein M times N total bits of data value are determined.

6. (previously presented) The apparatus of claim 5, wherein N and M are each greater than one.

7. (previously presented) The apparatus of claim 3, wherein at least one spectral band comprises a reference band.

8. (previously presented) The apparatus of claim 7, wherein the processor determines the data value for each of the one or more predetermined spectral bands based on a measured intensity value of the reference band.

9. (previously presented) The apparatus of claim 3, wherein the one or more light receivers is/are moved relative to an object or material, wherein a plurality of data values are determined as the one or more light receivers is/are moved relative to the object or material.

10. (previously presented) The apparatus of claim 7, wherein the one or more light receivers is/are moved relative to an object or material, wherein a plurality of data values are determined as the one or more light receivers is/are moved relative to the object or material.

11. (previously presented) The apparatus of claim 10, wherein at least one measured intensity value of the reference band is used to determine a position of the one or more light receivers relative to the object or material.

12. (previously presented) The apparatus of claim 10, wherein measured intensity values of the reference band are used to calculate a speed of movement value corresponding to a speed of movement of the one or more light receivers relative to the object or material.

13. (previously presented) The apparatus of claim 3, wherein at least one data value is determined as a function of a measured intensity in one spectral band and a measured intensity in a second spectral band.

14. (previously presented) The apparatus of claim 3, wherein at least one data value is determined as a function of a measured intensity in a first predetermined spectral band in a first area of an object or material and a measured intensity in a second predetermined spectral band in a second area of the object or material, wherein the first area is different from the second area.

15. (previously presented) The apparatus of claim 14, wherein the first predetermined spectral band comprises a different spectral band from the second predetermined spectral band.

16. (previously presented) The apparatus of claim 3, wherein the apparatus comprises a color bar code reader.

17. (previously presented) The apparatus of claim 3, wherein the received light passes through one or more interference filter elements prior to being measured by the one or more spectral sensors.

18. (previously presented) The apparatus of claim 3, wherein the received light passes through a plurality of interference filter elements prior to being measured by a plurality of spectral sensors.

19. (previously presented) The apparatus of claim 18, wherein the plurality of interference filter elements comprise a color gradient filter.

20. (previously presented) The apparatus of claim 3, wherein the one or more spectral sensors comprise one or more light to frequency converter sensing elements.

21. (amended) An apparatus for measuring spectral characteristics of received light, comprising:

one or more light receivers, wherein the received light is received by the one or more lights receivers, wherein the received light comprises light in a plurality of predetermined spectral bands;

a plurality of spectral sensors coupled to receive at least a portion of the received light, wherein the plurality of spectral sensors measure the intensity of the received light in ~~a~~ the plurality of predetermined spectral bands; and

a processor, wherein the processor receives data corresponding to a plurality of light intensities measured by the plurality of spectral sensors;

wherein the processor determines at least one data value as a function of a measured intensity in one spectral band and a measured intensity in a second spectral band.

22. (amended) An apparatus for measuring spectral characteristics of received light, comprising:

one or more light receivers, wherein the received light is received by the one or more lights receivers, wherein the received light comprises light in a plurality of predetermined spectral bands;

~~one or more~~ a plurality of spectral sensors coupled to receive at least a portion of the received light, wherein the ~~one or more~~ plurality of spectral sensors measure the intensity of the received light in ~~one or more~~ the plurality of predetermined spectral bands; and

a processor, wherein the processor receives data corresponding to ~~one or more~~ the plurality of light intensities measured by the ~~one or more~~ plurality of spectral sensors;

wherein the processor determines at least one data value as a function of a measured intensity in a first predetermined spectral band in a first area of an object or material and a measured intensity in a second predetermined spectral band in a second area of the object or material, wherein the first area is different from the second area.